Claim Listing

1–8. (cancelled)

9. (currently amended) A multi-nip calender for calendering a fiber web, the calender comprising:

a first set of rolls attached to a first frame, the first set of rolls having a first roll, a last roll, and a first intermediate roll between the first roll and the last roll, a second intermediate roll between the first intermediate roll and [[roll]] the last roll, and a third intermediate roll between the second intermediate roll and [[roll]] the last roll;

wherein the first, the second, and the third intermediate rolls lack ~~lacking~~ internal devices for loading or moving the rolls ~~shell~~, and wherein the second intermediate roll being rotatable about an axis which is fixed with respect to the frame, and the first and ~~second~~ third intermediate rolls are mounted for vertical motion on the frame;

wherein the first roll and the last roll are polymer-coated rolls each having a casing which is movable with respect to a portion fixed to the first frame, and each having [[an]] internal loading devices with which the casing is movable toward the second intermediate roll; and

a plurality of roll nips is defined between the rolls of the first set of rolls, such that the rolls from the first roll to the last roll alternate between polymer-coated rolls and metal rolls, and the roll nips in the set of rolls are closed by moving the casing of the first roll with its internal loading devices in [[the]] a first direction parallel to a plane extending through the set of rolls toward the second intermediate roll, and the roll nips in the set of rolls are closed by moving the casing of the last roll with its internal loading devices in a second [[the]] direction opposite the first direction and parallel to the plane extending through the set of rolls, towards the second intermediate roll.

10. (currently amended) The multi-nip calender of claim 9 further comprising at least one ~~or more~~ additional intermediate roll [[rolls]], said at least one additional intermediate roll lacking internal loading devices for loading or moving the rolls and ~~each additional intermediate roll~~ having an axis which is movable with respect to the frame, said at least one additional intermediate roll ~~each additional intermediate roll~~ being positioned between the second intermediate roll and the first roll or between the second intermediate roll and the last roll.

11. (currently amended) The multi-nip calender of claim 10, in which said at least one intermediate roll ~~each additional intermediate roll~~, and the first intermediate roll and third intermediate roll has equipment for lightening its weight.

12. (currently amended) The multi-nip calender of claim 10 in which a linear load distribution of the roll nips in the set of rolls is controlled by an additional load brought to the first and/or last roll in the set of rolls, wherein:

the additional load of the first roll in the set of rolls is used for influencing the linear loads of the roll nips ~~of the second intermediate rolls~~ between the ~~first~~ second intermediate roll and the last roll to a substantially lesser extent than the linear loads of the roll nips between the ~~first~~ second intermediate roll and the first roll; and

the additional load of the last roll in the set of rolls is used for influencing the linear loads of the roll nips ~~of the second intermediate rolls~~ between the ~~first~~ second intermediate roll and the first roll to a substantially lesser extent than the linear loads of the roll nips between the ~~first~~ second intermediate roll and the last roll.

13. (previously presented) The multi-nip calender of claim 12 wherein the additional load is brought to the first and/or last roll in the set of rolls using a loading element outside said roll.

14. (previously presented) The multi-nip calender of claim 13 wherein the loading element is a roll.

15. (currently amended) The multi-nip calender of claim 12 wherein the additional load is brought to the first and/or last roll in the set of rolls using the internal loading devices of said first and/or last roll.

16. (currently amended) The multi-nip calender of claim 9, wherein the first roll and/or the last roll are shoe rolls, in which the internal loading devices of the first roll and/or the last roll comprise[[s]] one or several shoe elements located under the casing of the roll, at the ~~place of the~~ roll nip, which one or several shoe elements can be loaded with liquid so that the casing of the ~~said shoe roll~~ first roll and/or the last roll moves in relation to the second intermediate roll in the set of rolls.

17. (currently amended) The multi-nip calender of claim 16, wherein the first roll and/or the last roll [[each shoe roll]] has two or several shoe elements for moving the casing of the first roll and/or the last roll and for profiling the fiber web.

18–20. (Canceled)

21. (currently amended) A multi-nip calender for calendering a fiber web, the calender comprising:

a frame;

a first roll which is a polymer-coated roll having a casing which is movable with respect to a portion fixed to the frame, and the first roll having an internal loading devices with which the casing is movable toward [[the]] a first intermediate roll;

a last roll which is a polymer-coated roll having a casing which is movable with respect to a portion fixed to the frame, the last roll having [[an]] internal loading devices with which the casing is movable toward the first intermediate roll, wherein the first intermediate roll is positioned between the first roll and the last roll;

~~a first intermediate roll position on the frame between the first roll and the last roll;~~

a second intermediate roll having a casing and positioned on the frame between the first intermediate roll and the last roll;

a third intermediate roll positioned on the frame between the second intermediate roll and the last roll;

a fourth intermediate roll having a casing and positioned on the frame between the third intermediate roll and the last roll;

a fifth intermediate roll positioned on the frame between the fourth intermediate roll and the last roll;

wherein the first~~, the second, and third~~ intermediate roll[[s]] ~~lacking~~ lacks an internal loading device[[s]] for loading or moving the ~~rolls shell,~~ first intermediate roll;

wherein the second intermediate roll lacks internal loading devices for loading or moving the second intermediate roll;

wherein the third intermediate roll lacks internal loading devices for loading or moving the third intermediate roll;

wherein the fourth intermediate roll lacks internal loading devices for loading or

moving the fourth intermediate roll;

wherein the fifth intermediate roll lacks internal loading devices for loading or moving the fifth intermediate roll; and

wherein the ~~second~~ third intermediate roll is rigidly mounted to the frame, and the first, second, fourth, and fifth ~~and second~~ intermediate rolls each have an axis which is movable with respect to the frame so that the first, second, fourth, and fifth intermediate rolls are mounted for vertical motion on the frame;

~~at least one second intermediate roll positioned between the first roll and the first intermediate roll, and at least one second intermediate roll positioned between the first intermediate roll and the last roll, each second intermediate rolls having an axis which is movable with respect to the frame; and~~

a plurality of roll nips defined between the first roll, first, second, third, fourth, and fifth intermediate rolls and the last roll, ~~rolls~~ such that the rolls from the first roll to the last roll alternate between polymer-coated rolls and metal rolls, and ~~the roll nips are closed so~~ that [[the]] roll nips between the first roll and the ~~first~~ third intermediate roll are closeable ~~closed~~ by moving the casing of the first roll with its internal loading devices in [[the]] a first direction towards the ~~first~~ third intermediate roll, and so that [[the]] roll nips between the last roll and the ~~first~~ third intermediate roll are closeable ~~closed~~ by moving the casing of the last roll with its internal loading devices in a second direction opposite the first direction towards the ~~first~~ third intermediate roll.

22. (new) The multi-nip calender of claim 21 in which a linear load distribution of the roll nips in the multi-nip calender is controlled by an additional load brought to the first and/or last roll in the set of rolls, wherein:

the additional load of the first roll in the set of rolls is used for influencing the linear loads of the roll nips between the third intermediate roll and the last roll to a substantially lesser extent than the linear loads of the roll nips between the third intermediate roll and the first roll; and

the additional load of the last roll in the set of rolls is used for influencing the linear loads of the roll nips between the third intermediate roll and the first roll to a substantially lesser extent than the linear loads of the roll nips between the third intermediate roll and the last roll.

23. (new) The multi-nip calender of claim 22 wherein the additional load is brought to the first and/or last roll in the set of rolls using a loading element outside said roll.

24. (new) The multi-nip calender of claim 23 wherein the loading element is a roll.

25. (new) The multi-nip calender of claim 22 wherein the additional load is brought to the first and/or last roll in the set of rolls using the internal loading devices of said first and/or last roll.

26. (new) The multi-nip calender of claim 9 further comprising a second set of rolls mounted to a second frame after the first set of rolls, the second set of rolls comprising:

a first roll, a last roll, and a first intermediate roll between the first roll and the last roll, a second intermediate roll between the first intermediate roll and the last roll, and a third intermediate roll between the second intermediate roll and the last roll;

wherein the first, the second, and the third intermediate rolls lack internal loading devices for loading or moving the rolls, and wherein the second intermediate roll being rotatable about an axis which is fixed with respect to the frame, and the first and third intermediate rolls are mounted for vertical motion on the frame;

wherein the first roll and the last roll are polymer-coated rolls each having a casing which is movable with respect to a portion fixed to the first frame, and each having internal loading devices with which the casing is movable toward the second intermediate roll; and

a plurality of roll nips is defined between the rolls of the second set of rolls, such that the rolls from the first roll to the last roll alternate between polymer-coated rolls and metal rolls, and the roll nips in the set of rolls are closed by moving the casing of the first roll with its internal loading devices in a first direction parallel to a plane extending through the set of rolls toward the second intermediate roll, and the roll nips in the set of rolls are closed by moving the casing of the last roll with its internal loading devices in a second direction opposite the first direction and parallel to the plane extending through the set of rolls, towards the second intermediate roll.

27. (new) The multi-nip calender of claim 9 wherein the first frame and the second frame are a single frame.

28. (new) The multi-nip calender of claim 9 wherein the first frame and the second frame are different frames.